

02/16/00
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02-17-00

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Atty. Docket No. REV02 P-300

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February 16, 2000
Date

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jc525 U.S. PTO
09/505119

02/16/00

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Joseph D. Revnell

For : MEASURING AND LAYOUT DEVICE

Assistant Commissioner for Patents
Box Patent Application
Washington, D.C. 20231

Dear Sir:

Enclosed herewith is the above-identified patent application comprising the following parts:

- 1) Postcard
- 2) 15 Pages of Specification
- 3) 5 Pages of Claims (29 claims)
- 4) 1 Page of Abstract
- 5) 12 Sheets of Drawings (in duplicate)
- 6) Declaration and Power of Attorney
- 7) Verified Statement Claiming Small Entity Status
- 8) Information Disclosure Statement, PTO Form 1449 and copies of information referenced
- 9) Filing Fee:

Basic Fee	\$345.00	\$345.00
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Additional Fees

Each independent claim in excess of three (2), times \$39.00	\$78.00
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Applicant :
For :
Page : 2

Number of claims in excess of
twenty (9), times \$9.00 \$81.00

Filing multiple dependent claims
per application \$130.00 \$0

Total Filing Fee \$504.00

A check in the amount of \$504.00 is enclosed to cover the fees noted above.


An Authorization to Charge Deposit Account is enclosed, which authorizes the Commissioner to charge payment of any concurrent or future fees associated with the filing and prosecution of this application to Deposit Account No. 16-2463. A duplicate of the Authorization is also enclosed.

Respectfully submitted,

JOSEPH D. REVNELL

By: Price, Heneveld, Cooper,
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2/16/2000
Date


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For: MEASURING AND LAYOUT DEVICE

**VERIFIED STATEMENT (DECLARATION) CLAIMING SMALL ENTITY
STATUS (37 CFR §1.9(f) and 1.27(b)) - INDEPENDENT INVENTOR**

As a below named inventor, I hereby declare that I qualify as an independent inventor as defined under 37 CFR §1.9(c) for purposes of paying reduced fees under Sections 41(a) and (b) of Title 35, United States Code, to the Patent and Trademark Office with regard to the invention entitled MEASURING AND LAYOUT DEVICE described in:

☒ the specification filed herewith
☐ application serial No. _____, filed _____
☐ patent No. _____, issued _____

I have not assigned, granted, conveyed, or licensed and am under no obligation under contract or law to assign, grant, convey, or license, any rights in the invention to any person who could not be classified as an independent inventor under 37 CFR §1.9(c) if that person had made the invention, or to any concern which would not qualify as a small business concern under 37 CFR §1.9(d) or a non-profit organization under 37 CFR §1.9(e).

Each person, concern, or organization to which I have assigned, granted, conveyed, or licensed or am under an obligation under contract or law to assign, grant, convey, or license any rights in the invention is listed below:

☒ no such person, concern, or organization
☐ persons, concerns, or organizations listed below*

*NOTE: Separate verified statements are required from each named person, concern or organization having rights to the invention averring to their status as small entities (37 CFR §1.27).

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I acknowledge the duty to file, in this application or patent, notification of any change in status resulting in loss of entitlement to small entity status prior to paying, or at the time of paying, the earliest of the issue fee or any maintenance fee due after the date on which status as a small entity is no longer appropriate. (37 CFR §1.28(b)).

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application, any patent issuing thereon, or any patent to which this verified statement is directed.

Joseph D. Revnell
NAME OF INVENTOR

Joseph D. Revnell
Signature of Inventor

02-15-2000
Date

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MEASURING AND LAYOUT DEVICE

BACKGROUND OF THE INVENTION

The present invention relates to measuring instruments, and in particular to a measuring and layout device.

5 Measuring instruments are used to measure the configuration of areas in order to be able to produce a sheet item with the same dimensions as the areas. In the flooring industry, measuring instruments are used to measure the floor space of a room in order to be able to cut the carpet, vinyl, etc. to accurately fit the room. In the counter business, measuring instruments are used to measure the configuration of a counter in order to be able to cut a counter top to
10 accurately fit the counter.

Heretofore, the measuring instruments and methods for measuring have included the use of paper patterns and the methods of square and measure, approximation, or cut in place. When a paper pattern is used to measure the dimensions of an area, a large sheet of paper is placed over the area, and the paper is cut to have the same dimensions as the area. The paper patterns,
15 however, can only be used once for each measurement. Moreover, if the area is very large, a sizeable amount of paper can be used for each project adding up to a waste of resources over a period of time. The method of square and measure employs a carpenter square to measure the size of rectangles making up a polygonal room. The measurements of the rectangles are then reproduced on a sheet good and the sheet good is cut to the shape of the rectangles. The method
20 of square and measure, however, only allows for measurements of areas made up of a plurality of rectangles. The method of approximation comprises approximating the size and shape of the area and the cutting the sheet good to that approximation. The sheet goods are then placed over the area and cut to fit the proper proportions. This method can be very time consuming and wasteful. The method of cut in place comprises placing the sheet good over the area and then
25 cutting the sheet good to fit the area. This method can also be very time consuming. Furthermore, the transportation of a large sheet good that has not been cut to proportion can be very expensive. Likewise, the method can be very wasteful because the remaining area of the sheet good has to be returned to the warehouse or other storage facility for the sheet good.

Accordingly, an apparatus solving the aforementioned disadvantages and having the aforementioned advantages is desired.

SUMMARY OF THE INVENTION

One aspect of the present invention is to provide a measuring and layout device having a stationary member having a flat surface adapted to be marked on and an angle and distance device rotatably coupled to the stationary member. The angle and distance device includes a longitudinally and laterally rigid extendable tape that can be extended from a central point and that has an edge that facilitates reliably marking on the stationary member to form an accurate template as the angle and distance device is rotated and the tape is extended and retracted to critical features of an area.

Another aspect of the present invention is to provide a method of accurately cutting sheet goods including the steps of providing a template including a center point and feature location comprising angle and distance information relative to the center point, providing a sheet of material to be cut, placing the template on the sheet of material, providing an angle and distance device adapted to identify critical points on the sheet of material based on the feature location information, and cutting the sheet of material according to the critical points.

The principal objects of the present invention include providing a measuring and layout device that can be used for measuring a wide variety of patterns. The measuring and layout device provides simple construction and is compact in size. The measuring and layout device can be quickly and easily used for accurate measurements. The measuring and layout device also provides easy measurements for complex shapes. The measuring and layout device is efficient in use, economical to manufacture, capable of a long operable life, and particularly adapted for the proposed use.

These and other features, advantages, and objects of the present invention will be further understood and appreciated by those skilled in the art by reference to the following specification, claims and appended drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view of the measuring and layout device of the present invention.
FIG. 2 is a side view of the measuring and layout device of the present invention.

FIG. 3 is a front view of the measuring and layout device of the present invention taken along the line 3-3 in FIG. 2.

FIG. 4 is an isometric exploded side view of the holder and tape of the present invention.

FIG. 5 is a top view of the measuring and layout device with a circular board of the present invention on an area to be measured.

FIG. 6 is a top view of the measuring and layout device with the circular board of the present invention on a sheet good for placement.

FIG. 7 is a top view of the measuring and layout device with a semi-circular board of the present invention on an area to be measured.

FIG. 8 is a top view of the measuring and layout device with the semi-circular board of the present invention on a sheet good for placement.

FIG. 9 is a perspective view of a second embodiment of the measuring and layout device of the present invention.

FIG. 10 is a perspective view of a third embodiment of the measuring and layout device of the present invention.

FIG. 11 is an isometric view of the tape with a pivotal pointer of a fourth embodiment of the measuring and layout device of the present invention.

FIG. 12 is a top view of the fourth embodiment of the measuring and layout device of the present invention on an area to be measured.

FIG. 13 is a top view of the fourth embodiment of the measuring and layout device of the present invention on a sheet good for placement.

FIG. 14 is a perspective view of a fifth embodiment of the measuring and layout device of the present invention.

FIG. 14A is a side view of a tape measure including a pinch-roller extender.

FIG. 15 is a schematic view of a method using a sixth embodiment of the measuring and layout device of the present invention.

FIG. 16 is a plan view of a template made from an alternative method where a constant pivot is not used.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

For purposes of description herein, the terms “upper,” “lower,” “right,” “left,” “rear,” “front,” “vertical,” “horizontal,” and derivatives thereof shall relate to the invention as orientated in Fig. 1. However, it is to be understood that the invention may assume various alternative orientations, except where expressly specified to the contrary. It is also to be understood that the specific devices and processes illustrated in the attached drawings, and described in the following specification, are simply exemplary embodiments of the inventive concepts defined in the appended claims. Hence, specific dimensions and other physical characteristics relating to the embodiments disclosed herein are not to be considered as limiting, unless the claims expressly state otherwise.

The reference number 10 (FIGS. 1 and 2) generally designates a measuring and layout device embodying the present invention. The measuring and layout device 10 includes a stationary member 12 and an angle and distance device 15 rotatably connected to the stationary member 12. The angle and distance device 15 includes a longitudinally rigid and laterally rigid extendable tape 58 that facilitates reliably marking on the stationary member 12 to form an accurate template 20 as the angle and distance device 15 is rotated and the tape 58 is extended and retracted to critical features 88 of an area 22. As described in more detail below, the template 20 is used to record dimensions 21 of the area 22 and to mark the dimensions 21 on a sheet good 24 (FIG. 6), such as floor covering (e.g. vinyl), wall covering (e.g. paneling), or the like.

The illustrated stationary member 12 is a board or a thin panel. The stationary member 12 preferably has a substantially semi-circular configuration (FIG. 1) with a straight edge 13 between two circumferential ends 15 of the semi-circle. The straight edge 13 is preferably slightly shorter than the diameter of the semi-circle. It is contemplated that the stationary member 12 could have any shape depending on the area to be measured. For example, the stationary member 12 can have a circular (FIG. 5), square or rectangular configuration. The stationary member 12 includes a top surface 26 that can be erasably marked on. Alternatively, a sheet of paper can be attached to the surface 26 to be marked on. The illustrated stationary member 12 has non-slip feet 14 attached to a bottom surface 24 of the stationary member 12. Notably, these non-slip feet 14 are not needed in many applications. Where needed, the non-slip feet 14 are made of a friction-generating material that will prevent movement of the measuring

and layout device 10 once the measuring and layout device 10 is placed into position. When the surface to be measured can be scratched or where it has a tendency to be slippery, preferably, the non-slip feet 14 are suction cups made of non-marring material although pointed feet, rubber feet, or the like can also be used. The angle and distance device 15 is pivotally mounted to the top surface 26 of the stationary member 12 at the axis of the stationary member 12. Preferably, the angle and distance device 15 is pivotally connected to the stationary member 12 by a snap fastener 28 that allows the angle and distance device 15 to be removed from the stationary member 12. The snap fastener 28 also allows the angle and distance device 15 to rotate 360 degrees relative to the stationary member 12. Therefore, the angle and distance device 15 can be removed from a first stationary member and then attached to a second stationary member. The snap fastener 28 therefore allows the angle and distance device 15 to be used with several different stationary members 12. It is contemplated that a rivet could connect the angle and distance device 15 to the stationary member 12, thereby securely connecting the angle and distance device 15 to the stationary member 12.

As seen in Figures 1-3, the illustrated angle and distance device 15 includes a carrier 16 and a tape measure 18. The carrier preferably has a U-shaped cross-section with a first side wall 30, a second side wall 32 and a bottom wall 34 that connects the first side wall 30 and the second side wall 32. The snap fastener 28 is attached to the bottom wall 34 of the carrier 16, thereby connecting the carrier 16 to the stationary member 12. The illustrated tape measure 18 has a housing 35 that is removably operably supported on the carrier 16 between the first side wall 30 and the second side wall 32 above the bottom wall 34. The tape measure 18 is a commercially available tape measure of the type that has a spring-biased rewind, and has a belt clip 36 on one side. Preferably, the tape measure 18 is removably secured to the carrier 16 by inserting the first side wall 30 into the clip 36 attached to the housing 35. In an alternative embodiment, the housing 35 and the carrier 16 are integral. In the alternative embodiment, the tape measure 18 includes a replaceable tape 18 that is operably supported on the carrier 16 within the integral housing 35 and carrier 16.

In the illustrated example, the carrier 16 includes a tape measure extender 38. The tape measure extender 38 allows a single person to create the template 20 for the measurement and layout device 10. The tape measure extender 38 includes a top cross bar 40 that extends between and is pivotally attached to a front top portion of the first side wall 30 and the second side wall

32. The cross bar 40 can freely rotate relative to the carrier 16. A crank arm 42 located outside of the second side wall 32 extends transversely to and is operably connected to the cross bar 40. It is contemplated that the crank arm 42 could be located outside of the first side wall 30 and connected to the cross bar 40. A handle 44 is transversely attached to the crank arm 42 whereby the top cross bar 40 can be rotated by moving the handle 44 in a circle around the axis of rotation of the top cross bar 40. The crank arm 42 can rotate relative to the handle 44, thereby allowing rotation of the crank arm 42 without rotating the handle 44 relative to the carrier 16. A first pulley wheel 46 is attached to the top cross bar 40 adjacent to a top inside front portion of the second side wall 32. The tape measure extender 38 also includes a middle cross bar 48 that extends between and is attached to a front middle portion of the first side wall 30 and the second side wall 32. The middle cross bar 48 is located generally below the top cross bar 40. A tape roller 52 is located in the center of the middle cross bar 48 and has an integral second pulley wheel 54 adjacent the second side wall 32. The first pulley wheel 46 and the second pulley wheel 54 are aligned vertically and joined by a drive belt 56. Therefore, when the handle 44 of the crank arm 42 is moved in a circle around the axis of rotation of the top cross bar 40, the top cross bar 40 and the first pulley wheel 46 will rotate and thereby operate the drive belt 56. Consequentially, the second pulley wheel 54 and the tape roller 52 will rotate via the movement of the drive belt 56. A bottom cross bar 57 extends between and is attached to the front bottom portion of the first side wall 30 and the second side wall 32 generally below the middle cross bar 48. The bottom cross bar 57 can rotate freely relative to the carrier 16. The illustrated tape roller 52 has a convex outer circumferential surface 59 and the apex of the convex outer surface comes into contact with the bottom cross bar 57 when the tape measure 18 is not placed within the carrier 16. Therefore, the tape roller 52 and the bottom cross bar 57 will rotate in opposite directions when the handle 44 is rotated around the axis of rotation of the top cross bar 40.

The illustrated tape measure 18 includes tape 58 that is frictionally held between the tape roller 52 and the bottom cross bar 57 of the carrier 16. The tape 58 has an upper concave surface with approximately the same radius of curvature as the convex outer circumferential surface 59 of the tape roller 52. As a consequence of the tape roller 52 and the bottom cross bar 57 rotating in opposite directions, the tape 58 held between the tape roller 52 and the bottom cross bar 57 will extend from the carrier 16 when the tape roller 52 is rotated in the counter clockwise direction. Therefore, rotation of the handle 44 in the counter clockwise direction

around the axis of rotation of the top cross bar 40 of the tape measure extender 38 will cause the tape 58 to mechanically extend outwardly from the carrier 16, thereby allowing a single person to extend the tape 58 from the carrier 16 without leaving the locality of the carrier 16. In the illustrated embodiment, the tape 58 extends from a housing 35 placed into the carrier 16.

Alternatively, the carrier 16 and the housing 35 can be integral and the tape 58 can be inserted into the integral housing 35 and carrier 16. Likewise, in an alternative embodiment, the tape 58 can be integral with the housing 35 and the carrier 16. Furthermore, the tape measure 18 preferably has a digital readout 55 on the top of the tape measure 18 for accurately giving the distance that the tape 58 is extended from the tape measure 18.

The illustrated carrier 16 also includes a front leg 60 extending parallel to the stationary member 12 from the bottom wall 34 of the carrier 16 adjacent the bottom cross bar 57. The front leg 60 is a rectangular plate with a width slightly larger than the width of the tape 58 and that extends approximately to the circumference of the circle or semi-circle of the stationary member 12. As described in more detail below, the front leg 60 is used to make the template 20. An inner guide 62 is connected to a top 66 of the front leg 60 adjacent the tape roller 52. The inner guide 62 has a flat panel 64 with a pair of arms 68 that extend upwardly and at an angle away from the carrier 16 from opposite ends of an inner edge of the flat panel 64. A rotatable wheel 70 extends between each of the arms and the flat panel 64. The rotatable wheels 70 have a distance between them substantially equal to the width of the tape 58. The inner guide 62 functions to direct the tape 58 as the tape 58 extends from the carrier 16. The illustrated front leg 60 also has an outer guide 72 attached to the top 66 of a distal end 74 of the front leg 60. The outer guide 72 has the same configuration and functions in the same manner as the inner guide 62 to direct the tape 58 in a straight line from the carrier 16. In an alternative embodiment, the front leg 60 has a U-shaped cross section, with the tape 58 located within the U-shaped cross section. The front leg 60 of the alternative embodiment only includes a pin at a distal end of the front leg 60 that extends between the two side walls of the U-shaped cross section. The pin is located above the tape 58 and holds the tape 58 within the side walls of the front leg 60.

In the illustrated example, the tape 58 (FIG. 4) has a downwardly projecting portion 81 of an L-shaped end 82 typically found on the tape measure 18. A holder 74 is attached to the downwardly projecting portion 81 of the L-shaped end 82 of the tape 58. The holder 74 is used

to securely hold a writing utensil 78, preferably a pencil, erasable marker, or crayon. The holder 74 has an upwardly opening bottom portion 80 that has a U-shaped cross-section and that that receives the downwardly projecting portion 81 of the L-shaped end 82 of the tape 58. The U-shaped bottom portion 80 also have a flange 83 that is secured over a top portion 85 of the L-shaped end 82 of the tape measure 18, thereby securing the holder 74 to the tape measure 18 when the downwardly projecting portion 81 of the L-shaped end 82 is inserted into the U-shaped bottom portion 80. A cylinder 84 is attached to an outside wall of the U-shaped bottom portion 80 that faces away from the carrier 16. The inside diameter of the cylinder 84 is about the same as the outside diameter of the writing utensil 78 in order to frictionally hold the writing utensil 78 therein. Alternatively, the holder 74 only includes a cylinder 84 and is integrally attached to the end of the tape 58.

As seen in Figure 5, the measuring and layout device 10 is used by first choosing the appropriate stationary member 12. The carrier 16 is then snap-fit to the stationary member 12 by the snap-fastener 28. Thereafter, the non-slip feet 14 of the stationary member 12 are attached to the area 22 to be measured, thereby locking the stationary member 12 to the area 22. Preferably, the measuring and layout device 10 is clamped to the area 22 when the area 22 is a table top. Notably, the shape of the stationary member 12 can be other than semi-circular, and the measuring and layout device 10 can be placed anywhere on or near the area 22 to be measured. The area 22 to be measured can be a floor that needs to be carpeted or a counter that needs a top. The area 22 to be measured could also be a wall, and the measuring and layout device 10 can be used for obtaining dimensions of a wall, such as a window opening or the like. The tape measure 18 is then extended to a critical feature 88 on the area 22 to be measured. The critical feature 88 is defined as either a corner of the area 22, a point on an edge of an area 22 where the edge becomes non-linear or anywhere along the edge of an area 22 that is critical for measurement. The distance or dimension 21 from the measuring and layout device 10 to the critical feature 88 is then noted and written on the stationary member 12, thereby creating the template 20. In a preferred embodiment, a paper is placed over the stationary member 12 and around the carrier 16 to record the template 20. In another preferred embodiment, the template 20 is written directly onto the stationary member 12 wherein the stationary member is erasable. The template 20 is prepared by first drawing a line 98 along a straight edge 100 of the front leg 60 of the carrier 16. The distance 21 from the measuring and layout device 10 to the critical feature 88 is then written

next to the line 98 on the stationary member 12. In the illustration, the line 98 has been drawn, and the distance 21 (i.e. 175") has been written beside it. The distance 21 is measured from the critical feature 88 to a point on the tape 58, preferably determined by drawing a perpendicular mark on the line 21 aligned with and corresponding to a number on the tape 58 equal to the distance 21. The carrier 16 is then rotated again until the tape measure 18 is aligned with another critical feature 88 of the area 22 to be measured and the distance 21 is again noted and recorded on the template 20 as explained above. Notably, by extending the tape 58 to a second point in the middle or any other edge of the room and then reversing the measuring and layout device 10 end to end, additional measurements can be taken at the new location. This would allow someone to measure around blind corners in a room much like surveyors lay out a plot of land. It is contemplated that two different papers can be used for taking measurements at the two different room locations, or that different color markings can be made with the same paper to make a single template 20 having all of the information for the room with blind corners thereon.

As seen in Figure 6, the measuring and layout device 10 is used to measure sheet goods 24 for placement, and is used by securing the measuring and layout device 10 to the sheet goods 24 by the non-slip feet 14. The measuring and layout device 10 could also be placed near the sheet goods 24, if the stationary member 12 was placed near the area 22 to be measured. If the template 20 was written directly on the stationary member 12, the same stationary member 12 must be used to measure the sheet goods 24. If the paper was placed on the stationary member 12 to make the template 20, the paper can either be placed over another stationary member 12 of another measuring and layout device 10 or over the stationary member 12 of the same measuring and layout device 10. If the paper is used, only the paper has to be transported or faxed between the area 22 to be measured and the sheet goods 24. Once the measuring and layout device 10 is secured to the sheet goods 24, the template 20 is read backwards to draw the configuration of the area 22 to be measured. The template 20 is read backwards by first aligning the straight edge 100 of the front leg 60 with a first one of the lines 98 written to form the template 20. The tape measure 18 is then extended to the distance 21 noted on the template 20 and a distance mark 108 is drawn on the sheet goods 24. The carrier 16 is then rotated until the next line 98 is encountered. Once again, the straight edge 100 of the front leg 60 is aligned with the next line 98 and the tape measure 18 is extended to the distance 21 noted on the template 20 and the distance mark 108 is drawn on the sheet goods 24. After all of the distances 21 noted on the

template 20 have been marked on the sheet goods 24, the measuring and layout device 10 is removed from the sheet goods 24 and lines 110 are drawn between the distance marks 108 on the sheet goods 24 that were consecutively drawn on the sheet goods 24. The lines 110 connecting the consecutive distance marks 108 will have the same configuration as the area 22 to be measured. After all of the lines 110 are drawn between the distance marks 108 on the sheet goods 24, the sheet goods 24 are cut along the lines 110 thereby making the sheet good 24 with the same configuration as the area 22 to be measured. The sheet good 24 can then be placed over the area 22 to be measured and secured to the area 22 to be measured to form a cover.

As seen in Figure 7, if the stationary member 12 with the semi-circular configuration is used to make the template 20, the measuring and layout device 10 is used by first placing the straight edge 13 of the semi-circular stationary member 12 along a first edge 111 of the area 22. The carrier 16 on the semi-circular stationary member 12 is positioned on the stationary member 12 whereby a back end 61 of the carrier 16 or tape measure 18 does not extend beyond the straight edge 13 of the stationary member 12 while the carrier 16 is rotated around the snap fastener 28. Therefore, the template 20 can be made when the straight edge 13 of the stationary member 12 is placed next to a wall along an edge of the area 22 to be measured. The template 20 is created by rotating the carrier 16 to point towards the critical feature 88'' along the first edge 111 of the area 22 distal from the stationary member 12. The line 98 is then drawn, and the distance 21 is written beside the line 98. The carrier 16 is then rotated further along the semi-circle until the tape measure 18 is aligned with another critical feature 88''' of the area 22 to be measured and the distance 21 is again noted and recorded on the template 20 as explained above. The template is completed by marking all of the lines 98 and distances 21 of critical features 88 of the area.

As seen in Figure 8, the measuring and layout device 10 with the semi-circular configuration is used to measure sheet goods 24 for placement by securing the measuring and layout device 10 to the sheet goods 24. A line 102 is then drawn along the straight edge 13 of the semi-circular stationary member 12 to the end 15 of the semi-circle that was aligned with the critical feature 88'. Alternatively, the straight edge 13 is aligned with a pattern or feature on the sheet goods (such as carpet weaving or a straight edge of bulk goods). The distance mark 108 is drawn on the sheet goods 24 at the end 15 of the semi-circle. The template 20 is then read backwards as described above for all of the critical features 88 and the distance marks 108 are

drawn on the sheet goods 24. As described above, the measuring and layout device 10 is then removed from the sheet goods 24 and lines 110 are drawn between the distance marks 108 on the sheet goods 24 that were consecutively drawn on the sheet goods 24. The sheet goods 24 are then cut along the lines 110 and placed over the area 22 to be measured and secured to the area 22 to be measured to form a cover. It is contemplated that the method of using the measuring and layout device with the semi-circular stationary member 12 to create a template 20 and measure sheet goods 24 as described directly above could also be used with any stationary member 12.

The reference numeral 10a (FIG. 9) generally designates another embodiment of the present invention, having a measuring and layout device. Since measuring and layout device 10a is similar to the previously described measuring and layout device 10, similar parts appearing in FIG. 1 and FIG. 9, respectively, are represented by the same, corresponding reference number, except for the suffix "a" in the numerals of the latter. In the measuring and layout device 10a, the carrier 16a does not include a front leg 60. The tape 58a of the tape measure 18a is resilient and has a pair of well-defined hard edges 112. The first resilient edges 112 of the measuring and layout device 10a take the place of the straight line 100. Therefore, the lines 110a drawn on the template 20a are drawn along the resilient edges 112.

The reference numeral 10b (FIG. 10) generally designates another embodiment of the present invention, having a measuring and layout device. Since measuring and layout device 10b is similar to the previously described measuring and layout device 10, similar parts appearing in FIG. 1 and FIGS. 10, respectively, are represented by the same, corresponding reference number, except for the suffix "b" in the numerals of the latter. The measuring and layout device 10b is not connected to a stationary member 12. Therefore, the carrier 16b is placed directly on the template 20b and rotated under the center of the carrier 16b in order to make the template 20b. The template 20b is therefore preferably written on a piece of paper.

The reference numeral 10c (FIG. 11) generally designates another embodiment of the present invention, having a measuring and layout device. Since measuring and layout device 10c is similar to the previously described measuring and layout device 10, similar parts appearing in FIGS. 4, 7 and 8 and FIGS. 11-13, respectively, are represented by the same, corresponding reference number, except for the suffix "c" in the numerals of the latter. In the measuring and layout device 10c a pivotable pointer 116 is attached to the end of the tape 58c of the tape

measure 18c instead of the holder 74. The pivotable pointer 116 is attached to the top of the tape 58a by a pivot 119. The pivotable pointer 116 has a first portion 118 with a point 120 at a distal end 122 and a second portion 124 at a near end 126. The second portion 124 of the pivotable pointer 116 has a width approximately equal to the width of the tape 58c. A piece of white tape 116' or markable surface is placed on tape 58c. When the pointer 116 is pivoted away from an aligned position, its angle is marked on the white tape 116' including a notation, and the same notation is written on template 20c. The template 20c for the measuring and layout device 10c is written on the stationary member 12c as described above.

As seen in Figure 12, the measuring and layout device 10c is used by first placing the straight edge 13c of the semi-circular stationary member 12c along a first edge 126 of the area 22c. The tape 58c is then extended to a first critical feature 128 of the area 22c, with the point 120 touching the first critical feature 128. When the first critical feature 128 is measured, the second portion 124 of the pivotable pointer 116 is directly above and aligned with the tape 58c. The distance 21c and the line 98c are then written on the template 20c on the stationary member 12c as described above. The tape 58c is then rotated to a second critical feature 130 of the area 22c, with the point 120 touching the second critical feature 128. Once again, the distance 21c and the line 98c is written on the template 20c on the stationary member 12c with the second portion 124 of the pivotable pointer 116 above and aligned with the tape 58c. Thereafter, the tape 58c is rotated to meet a second edge 131 of the area 22a. The pivotable pointer 116 is rotated so that a first straight edge 132 of the pivotable pointer 116 is aligned with the second edge 130. The distance 21c and the line 98c of the blade 58c to the first straight edge 132 are then written on the template 20c on the stationary member 12c as described above. The tape 58c is then finally rotated to meet a third edge 136 of the area 22a. The pivotable pointer 116 is once again rotated so that a second straight edge 133 of the pivotable pointer 116 is aligned with the third edge 136. Furthermore, the distance 21c and the line 98c of the blade 58c to the second straight edge 133 are then written on the template 20c on the stationary member 12c as described above.

As seen in Figure 13, the measuring and layout device 10c is used to measure sheet goods 24c by first placing the semi-circular stationary member 12c on the sheet goods 24c. A line 140 is then drawn on the sheet goods 24c along the straight edge 13c. Thereafter, the template 20c is read backwards as described above and distance marks 108c are marked at the

first critical feature 128 and the second critical feature 130. The tape 58c is then extended to the distance 21c noted on the template 20c corresponding to the second edge 130 of the area 22c, and a first border line 141 is drawn along the first straight edge 132 of the pivotable pointer 116. The tape 58c is then extended to the distance 21c noted on the template 20c corresponding to the third edge 136 of the area 22c, and a second border line 142 is drawn along the second straight edge 133 of the pivotable pointer 116. The stationary member 12c is then removed from the sheet goods 24c and lines 110c are drawn extending the line 140, the first border line 141 and the second border line 142. A line 110c is also drawn between the distance marks 108c. The interior space of the line 110c, the line 140, the first border line 141 and the second border line 142 will have the same configuration as the area 22 to be measured. The sheet good 24c are then cut as described above, placed over the area 22c to be measured and secured to the area 22c to be measured to form a cover.

The reference numeral 10d (FIG. 14) generally designates another embodiment of the present invention, having a measuring and layout device. Since measuring and layout device 10d is similar to the previously described measuring and layout device 10, similar parts appearing in FIG. 3 and FIG. 14, respectively, are represented by the same, corresponding reference number, except for the suffix "d" in the numerals of the latter. In the measuring and layout device 10d, a battery-operated motor 150 replaces the crank arm 42 and the handle 44 of the tape measure extender 38d. The battery-operated motor 150 performs the same function as the crank arm 42 and the handle 44 by turning the top cross bar 40d. Alternatively, the battery operated motor 150 could be connected to the middle cross bar 48d in order to extend the tape 58d by rotating the tape roller 58d. Therefore, the crank arm 42, the handle 44, the cross bar 40, the first pulley wheel 46, the second pulley wheel 54 and the drive belt 56 could be removed from the measuring and layout device 10d. In another alternative embodiment, the top cross bar 40 or the middle cross bar 48 could be configured with a central opening whereby a drill bit of a drill could be inserted axially into the top cross bar 40 or the middle cross bar 48 through the carrier 16 in order to rotate the top cross bar 40 or the middle cross bar 48. Therefore, the battery-operated motor 150 would include the drill and the drill bit. It is contemplated that the motor 150 could be operably connected to pinch rollers 150' for extending and retracting the tape (Fig. 14A).

The reference numeral 10e (FIG. 15) generally designates another embodiment and method of using the present invention, having a measuring and layout device. In the measuring

and layout device 10e, the angle and distance device 15e is an electronic angle and distance measuring device 15e. The electronic angle and distance measuring device 15e electronically measures feature location information including the angles and distances from a predetermined point to the critical features 88e of the area 22e to be measured. As seen schematically in Figure 15, the measuring and layout device 10e is used by first placing the template 20e with a center point on the area 22e to be measured. The electronic angle and distance measuring device 15e is then used to create the template 20e by measuring the angles and the distances from the center point to the critical features 88e of the area 22e. The angles and distances to the critical features 88e are then recording on the template 20e. A sheet 24e of material to be cut is then obtained and the template 20e is placed on the sheet 24e of material. The angle and distance device 20e is then provided in order to identify the critical features 88e from the area 22e on the sheet 22e of material based on the feature location information. Finally, the sheet 24e of material is cut according to the critical features 88e.

Fig. 16 discloses a modified method where a tape measure 181 having a longitudinally and laterally rigid tape 182 is placed angularly and randomly on a flat sheet 180. The tape measure 181 is extended and markings are placed on the flat sheet 180. The markings include a line for direction, a mark for distance, and the distance measured for showing a room 183.

In the forgoing description, it will be readily appreciated by those skilled in the art that modifications may be made to the invention without departing from the concepts disclosed herein. For example, a tape measure extender 38 is not required to use the measuring and layout device 10. The measuring and layout device 10 could be used by one person without the tape measure extender, but the person would have to move from the measuring and layout device 10 to the critical feature and back to the measuring and layout device 10 for each measurement taken. Furthermore, it is understood that the different embodiments of the measuring and layout device 10 can be combined or substituted. For example, the measuring and layout device 10 without a stationary member 12 can also be used without a front leg 60. Also, it is contemplated that a scope of the present invention includes a modified device having a light/laser-based distance measuring device or an optical distance measuring device instead of a tape measure. Also, it is contemplated that the markings on the tape can be optically read or displayed on an LED display, or the markings on a tape can be replaced by a reader that measures extension of the tape and that displays or prints out the extension data. The reader can also potentially be programmed to

automatically record angles and dimensions of tape extension to the critical room features at the respective angles. It is known in the art how to manufacture such readouts, optical readers, displayers, printers, and information recorders, such that these items do not need to be described herein for a person of ordinary skill to the present invention. Further, it is noted that the present method will work even without the tape measure being pivoted to the stationary member at a hard pivot. (See Fig. 16). It is contemplated that the template could be a picture as well as an outline, and that the present device can be used to draw the picture or outline. For example, the picture-type template could be a basketball court, a driveway, a hopscotch pattern or a cartoon character. Such modifications are to be considered as included in the following claims, unless these claims by their language expressly state otherwise.

We claim:

1. A measuring and layout device comprising:

a stationary member having a flat surface adapted to be marked on; and

an angle and distance device rotatably coupled to the stationary member, the angle and

distance device including a longitudinally and laterally rigid extendable tape that can be extended

5 from a central point and an edge that facilitates reliably marking on the stationary member to

form an accurate template as the angle and distance device is rotated and the tape is extended and retracted to critical features of an area.

2. The measuring and layout device of claim 1, wherein:

the angle and distance device includes a tape measure that incorporates the tape.

3. The measuring and layout device of claim 2, wherein:

the angle and distance device includes a carrier that is adapted to hold the tape measure.

4. The measuring and layout device of claim 3, wherein:

the carrier is pivotally coupled to the stationary member.

5. The measuring and layout device of claim 4, wherein:

the carrier includes a front leg adjacent a top of the stationary member; and

the front leg has guides for the tape and a straight edge for making the template.

6. The measuring and layout device of claim 4, wherein:

the carrier includes an integral housing; and

the tape measure is located within the housing.

7. The measuring and layout device of claim 1, wherein:

the stationary member is a board.

8. The measuring and layout device of claim 7, wherein:

the board includes non-slip feet.

9. The measuring and layout device of claim 1, wherein:
the template includes markings written directly onto the stationary member.
10. The measuring and layout device of claim 1, wherein:
the template includes markings written onto a paper placed on the stationary member.
11. The measuring and layout device of claim 1, wherein:
the stationary member has a circular configuration.
12. The measuring and layout device of claim 1, wherein:
the stationary member has a substantially semi-circular configuration.
13. The measuring and layout device of claim 1, wherein:
the angle and distance device includes a tape measure extender for mechanically extending the tape, thereby allowing a single person to create the template while staying in a single central location.
14. The measuring and layout device of claim 1, wherein:
the tape includes an end with a holder attached thereto; and
the holder is configured to secure a writing utensil.
15. The measuring and layout device of claim 1, wherein:
the angle and distance device has a digital readout for accurately communicating a distance that the tape is extended from the angle and distance device.
16. The measuring and layout device of claim 1, wherein:
the tape has a pivotal pointer at a distal end.

17. A method of measuring and laying out a template of a room, such as for cutting a carpet for a room floor, comprising:

providing a stationary member;

providing a tape measure;

5 extending the tape measure to a critical feature of an area in a room to be measured; and
recording information on the stationary member from the tape measure relating to the critical feature.

18. The method of measuring and laying out a template of claim 17, further comprising:

providing a pointer on an end of the tape measure adapted to be accurately aligned with the critical feature of the area; and

5 recording the information of the stationary member as the pointer aligns with the critical feature.

19. A method of measuring sheet goods for cutting and placement comprising:

placing a stationary member on a workpiece to be cut;

extending a tape measure according to the template;

marking the workpiece with marks according to the template; and

5 cutting the workpiece according to the marks.

20. The method of measuring sheet goods of claim 19, further comprising the steps of:

rotatably coupling the tape measure to the stationary member; and

making a pattern on the workpiece according to the template.

21. The method of measuring sheet goods of claim 20, wherein:

the marks form a continuous pattern; and

the step of cutting the workplace includes continuously cutting the workpiece according to the pattern.

22. A method of accurately cutting sheet goods comprising:
providing a template including a center point and feature location information comprising
angle and distance information relative to the center point;
providing a sheet of material to be cut;
5 placing the template on the sheet of material;
providing an angle and distance device adapted to identify critical points on the sheet of
material based on the feature location information; and
cutting the sheet of material according to the critical points.

23. The method of accurately cutting sheet goods of claim 22, wherein:
the angle and distance device is a tape measure.

24. The method of accurately cutting sheet goods of claim 22, wherein:
the angle and distance device is an electronic angle and distance measuring device.

25. A measuring and layout device comprising:
providing a stationary member having a flat surface adapted to be marked on;
rotatably coupling an angle and distance device to the stationary member, the angle and
distance device including a longitudinally and laterally rigid extendable tape that can be extended
5 from a central point and an edge that facilitates reliably marking on the stationary member; and
forming an accurate template by reliably marking on the stationary member
as the angle and distance device is rotated and the tape is extended and retracted to critical
features of an area.

26. The measuring and layout device of claim 1, further comprising:
a motor and motor controller operably connected to the longitudinally and laterally rigid
tape for extending, retracting and axially rotating the tape;
the motor controller being programmed to record data and create an electronic version of
5 the template.

27. The measuring and layout device of claim 26, wherein:
the tape includes a marker on one end, and the motor controller is programmed to move the marker in accordance with the template on a surface.
28. The measuring and layout device of claim 27, wherein:
the template comprises a picture.
29. The measuring and layout device of claim 26, wherein:
the motor controller is programmed for automatic operation to create the template and to draw the template on a workpiece.

MEASURING AND LAYOUT DEVICE

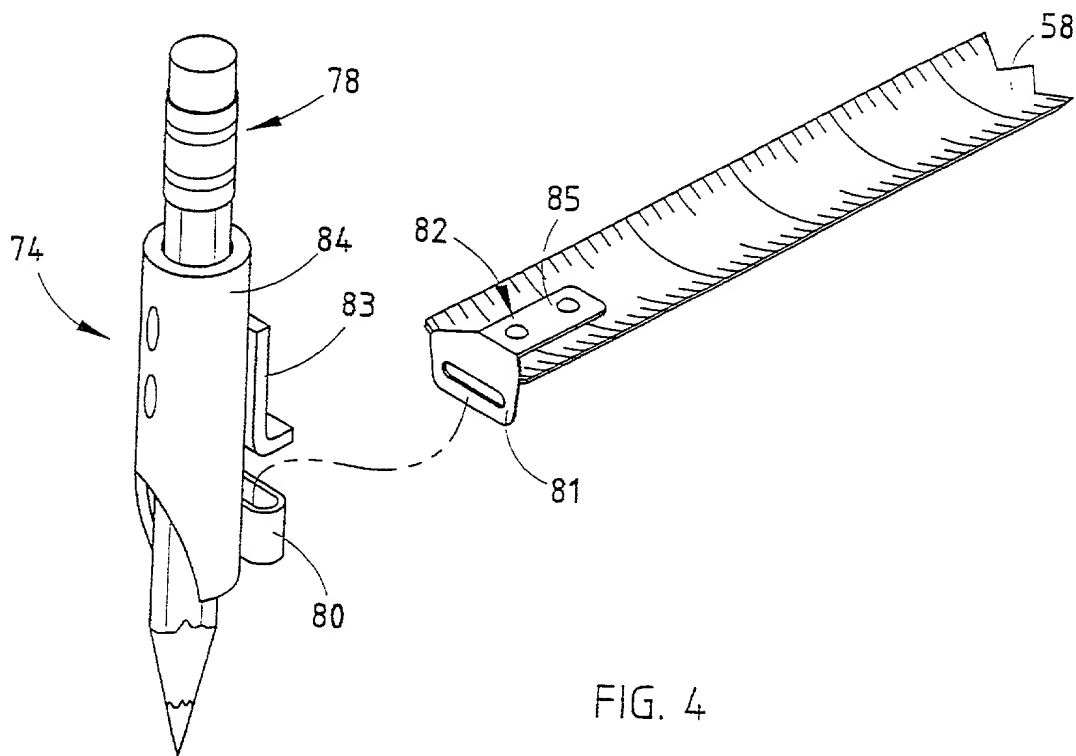
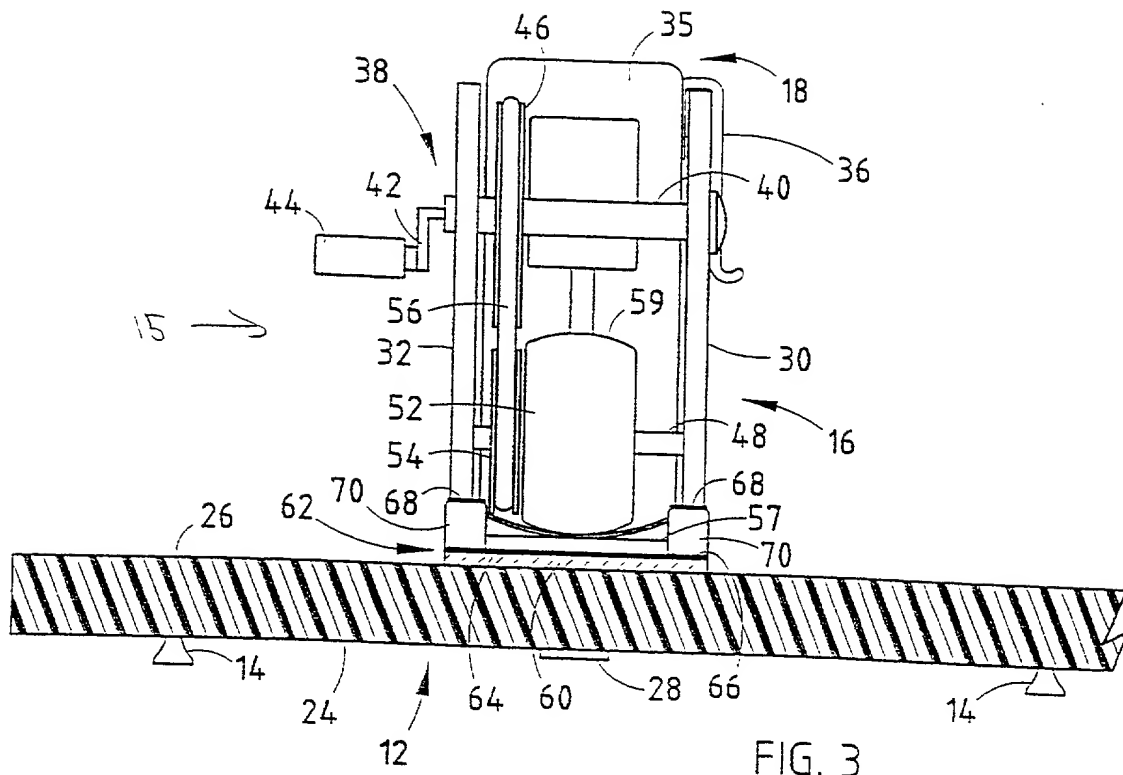
ABSTRACT OF THE DISCLOSURE

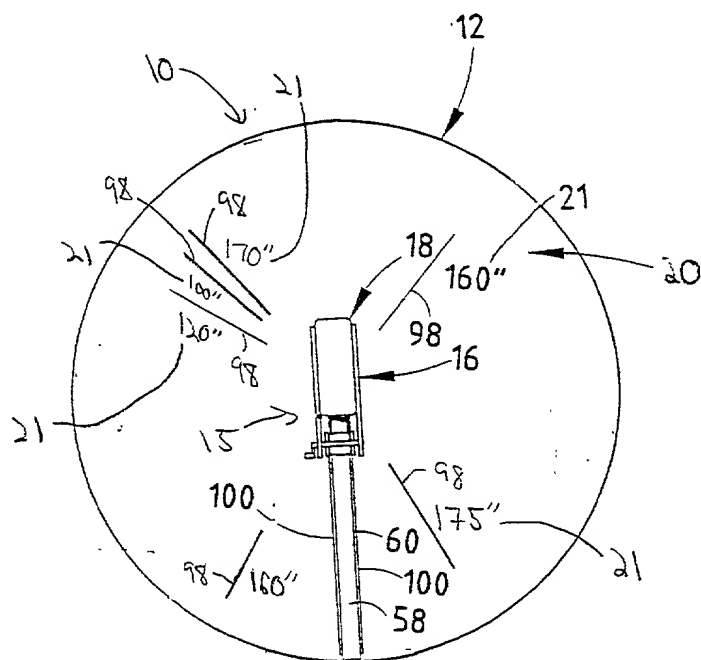
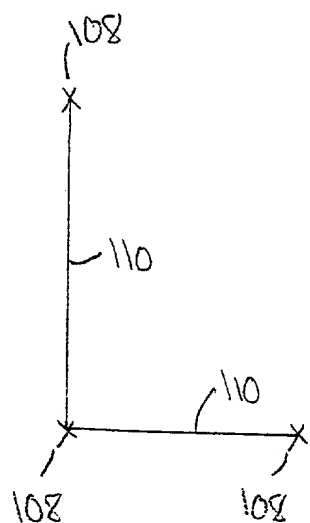
A measuring and layout device having a stationary member having a flat surface adapted to be marked on and an angle and distance device rotatably coupled to the stationary member.

- 5 The angle and distance device includes a longitudinally and laterally rigid extendable tape that can be extended from a central point and that has an edge that facilitates reliably marking on the stationary member to form an accurate template as the angle and distance device is rotated and the tape is extended and retracted to critical features of an area.

FIG. 1

FIG. 2

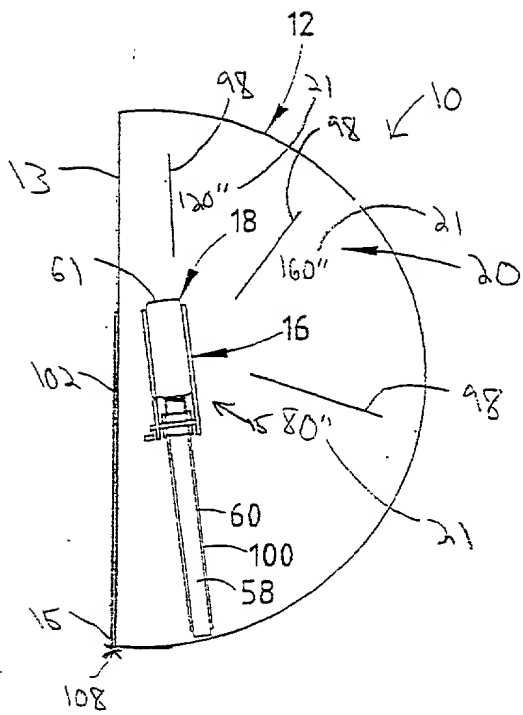


[illegible]

24

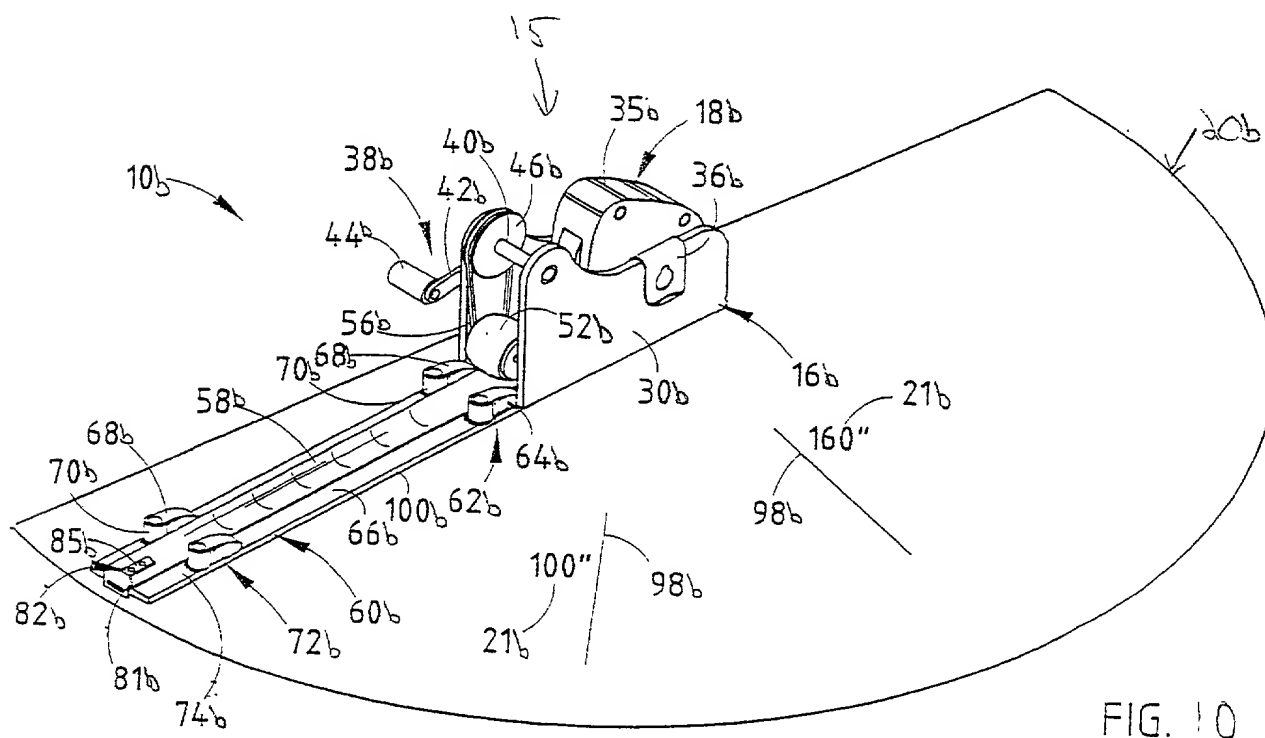
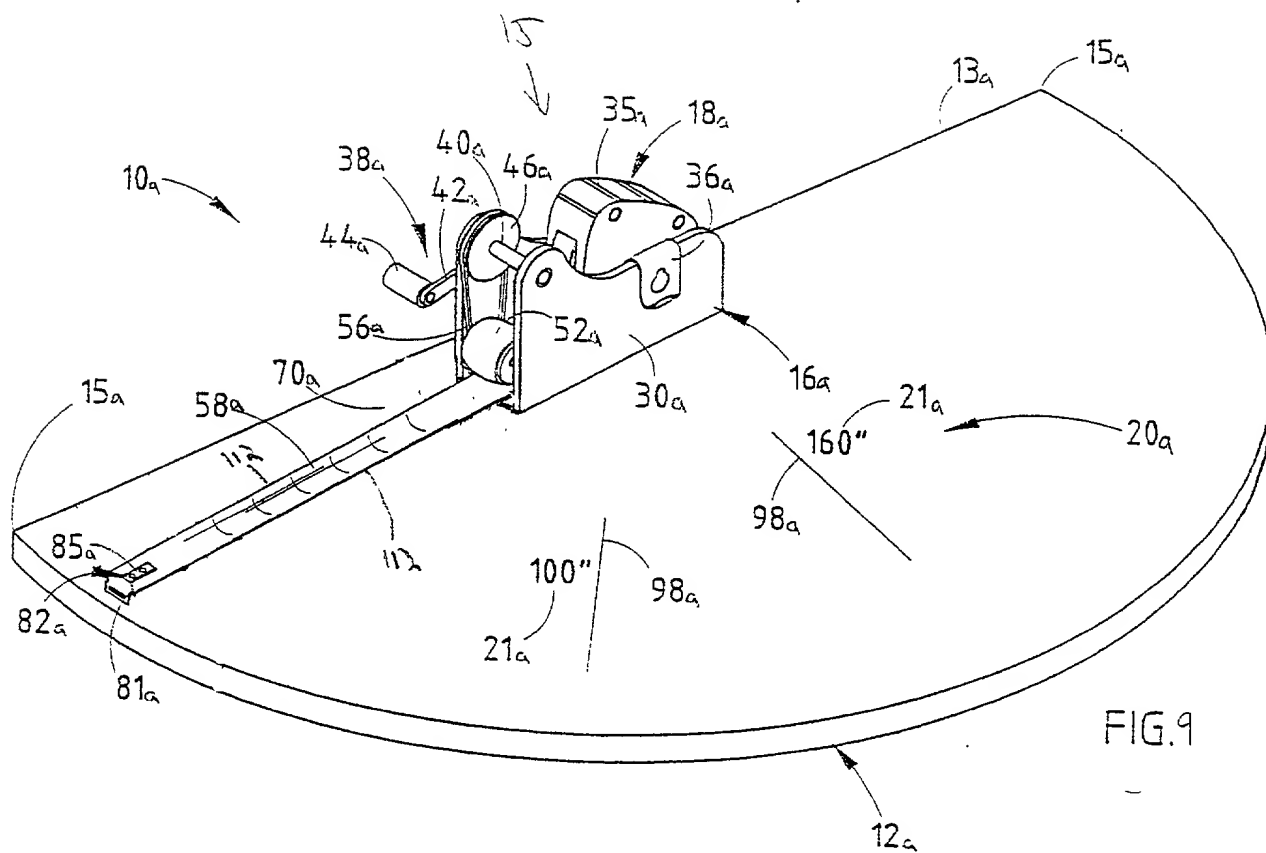
FIG. 6

039330" 6742650



24

FIG. 8



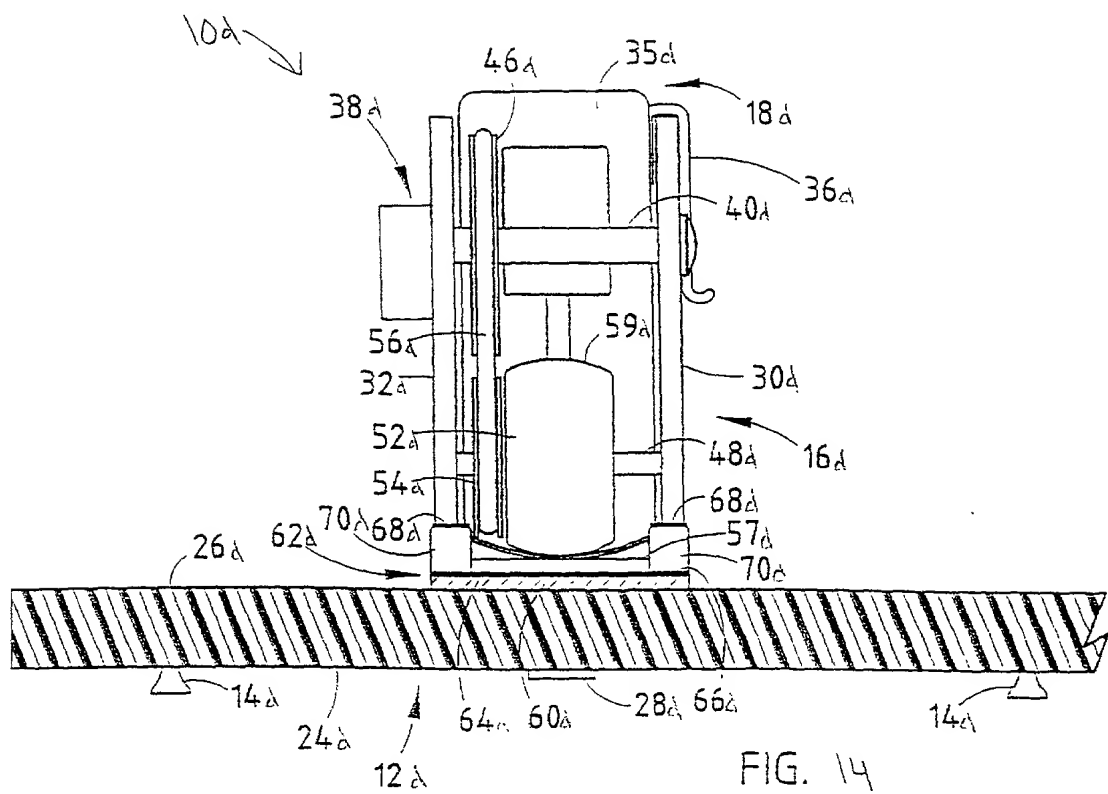


FIG. 14

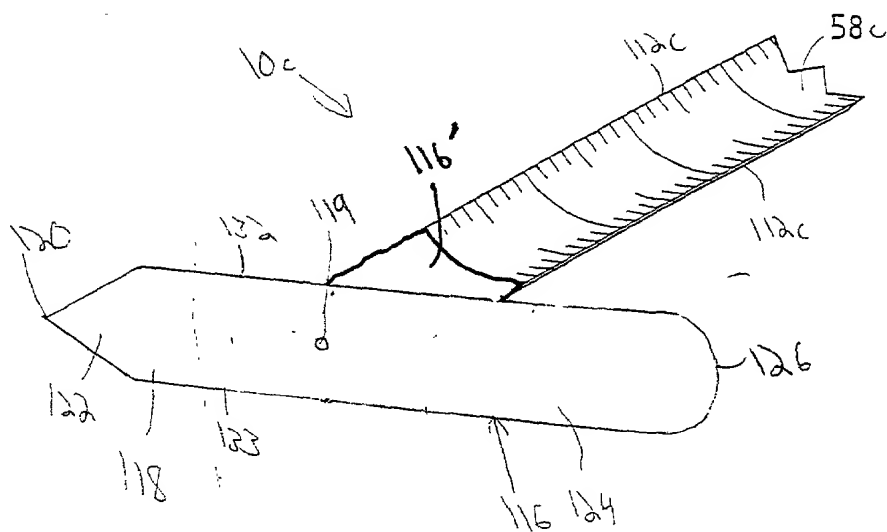


FIG. 11

The diagram illustrates a cross-sectional view of a dome-shaped structure, likely a lens or a specialized container. Key features include:

- Top Surface:** A semi-circular arc representing the top boundary.
- Internal Structure:** A rectangular component is positioned within the dome, tilted at an angle. It is labeled with "98c" near its base and "65" near its top edge.
- Dimensions and Angles:**
 - A dimension of "100" is indicated along the left side of the internal structure.
 - An angle of "10°" is shown between the top surface and the upper part of the internal structure.
 - A dashed line extends from the top right corner towards the center, labeled "58c".
 - Other labels include "10c", "20c", "98c", "126", "12c", "116-", "120", "121", and "130".
- Reference Frame:** The entire assembly is enclosed within a rectangular frame defined by lines 126, 12c, 121, and 130.

126


150

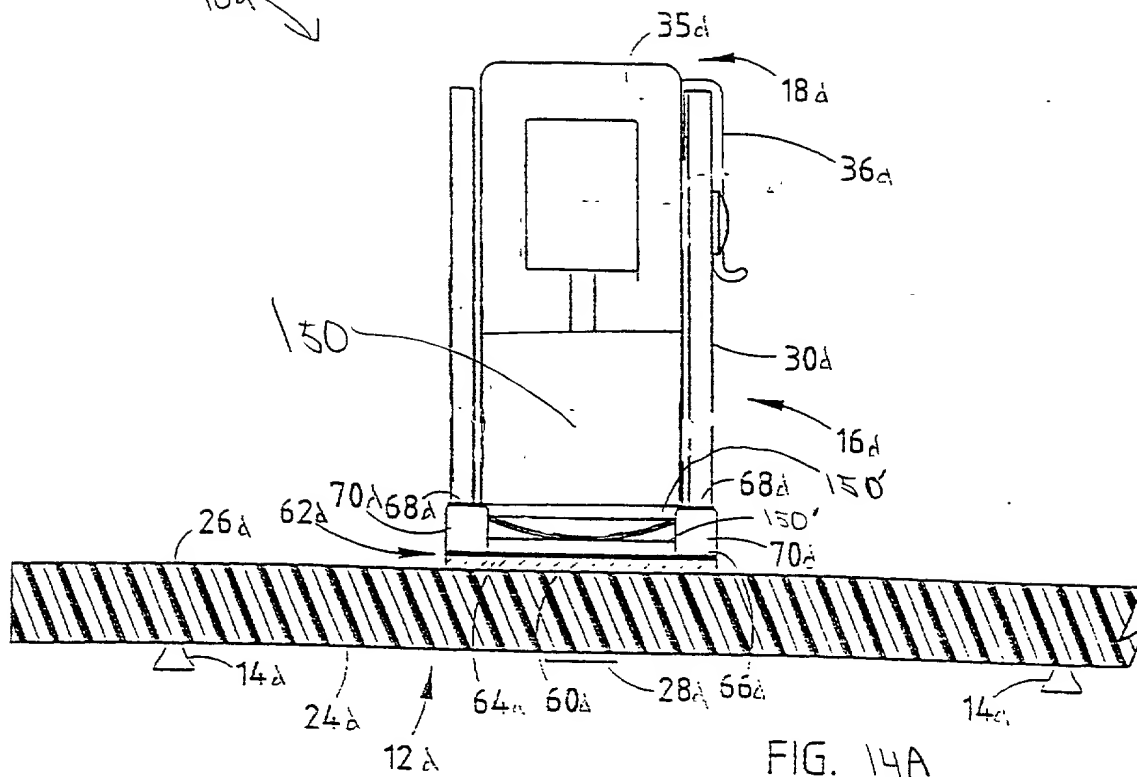
19c

A hand-drawn schematic diagram of a mechanical assembly. The diagram includes the following labeled components and dimensions:

- Top Horizontal Line:** Labeled with $108c$ at the left end, $110c$ in the middle, and 130 at the right end. A vertical line segment is labeled 128 near the top left corner.
- Left Vertical Line:** Labeled with 142 in the middle.
- Bottom Left Component:** A semi-circular base labeled 140 . Inside it is a rectangular component labeled 100 . A dimension line indicates a length of $100''$ for this component. A label $15c$ is at the bottom left.
- Internal Dimensions:**
 - A dimension of $10c$ is shown near the top of the semi-circular base.
 - A dimension of $20c$ is shown near the top of the rectangular component.
 - A dimension of $98c$ is shown near the top of the rectangular component.
 - A dimension of $65''$ is shown near the bottom of the rectangular component.
 - A dimension of $98c$ is shown near the bottom of the rectangular component.
- Right Side Component:** A vertical line segment labeled 141 . A small component labeled 120 is attached to it. A dimension line indicates a length of $58c$ for this component.
- Central Component:** A long, thin rectangular component labeled $24c$ is positioned diagonally, connecting the bottom left component to the right side component.

FIG. 13

10a 



Place the template 20e with a center point on the area 22e to be measured.

Create the template 20e using the electronic angle and distance measuring device 15e to measure the angles and the distances from the center point to the critical features 88e of the area 22e.

Record the angles and distances to the critical features 88e on the template 20e.

Obtain a sheet 24e of material to be cut.

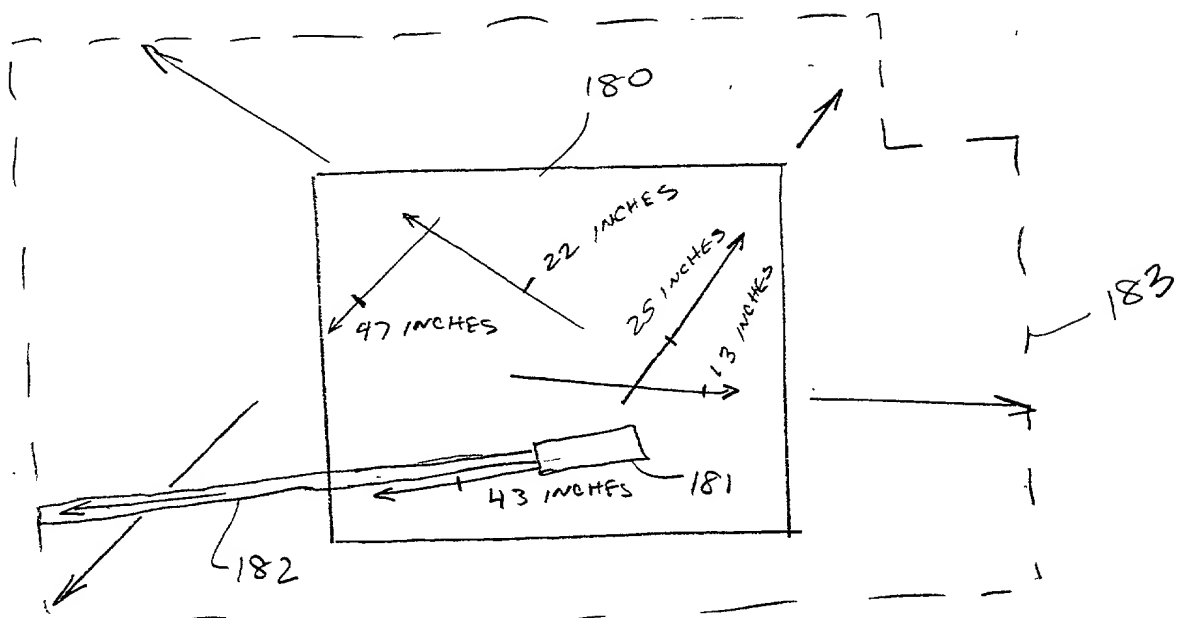
Place the template 20e on the sheet 24e of material.

Identify the critical features 88e from the area 22e on the sheet 22e of material based on the feature location information using the angle and distance device 20e.

Cut the sheet 24e of material according to the critical features 88e.

FIG. 15

FIG. 16



DECLARATION AND POWER OF ATTORNEY

As a below named inventor, I hereby declare:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor, if only one name is listed below, or an original, first and joint inventor, if plural names are listed below, of the subject matter which is claimed and for which a patent is sought on the invention entitled MEASURING AND LAYOUT DEVICE, the specification of which is attached hereto.

I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose to the United States Patent and Trademark Office (the Office), all information which is known by me to be material to patentability as defined in Title 37, Code of Federal Regulations (C.F.R.), Section 1.56.

CLAIM OF PRIORITY

I hereby claim foreign benefits under Title 35, United States Code (U.S.C.), Section 119(a)-(d) or § 365(b), of any foreign application(s) for patent or inventor's certificate, or § 365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below any foreign application for patent or inventor's certificate, or of any PCT international application, having a filing date before that of the application on which priority is claimed.

None

I hereby claim the benefit under 35 U.S.C. § 120, of any United States application(s), or § 365(c) of any PCT international application designating the United States of America, listed below and, insofar as the above-identified specification, including claims, discloses and claims subject matter in addition to that disclosed in the prior pending application(s). Listed below, I acknowledge the duty to disclose to the Office, all information which is known by me to be material to patentability as defined in 37 C.F.R. § 1.56, which became available between the filing date of the prior application and the national or PCT international filing date of this application.

None

POWER OF ATTORNEY

I hereby appoint the practitioners associated with the Customer Number provided below (i.e., the practitioners associated with the law firm of Price, Heneveld, Cooper, DeWitt and Litton) to prosecute this application and to transact all business in the Patent and Trademark Office connected therewith. Please direct all correspondence to the address associated with that Customer Number.

Customer Number 000,277

All statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true, and further, these statements are made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. § 1001, and that such willful false statements may jeopardize the validity of this application or any patent issued thereon.

Sole or First joint inventor:

 02-15-2000
Joseph D. Revdell Date

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